

ABSTRACT OF THE DISCLOSURE

A system and method are disclosed for extending the bandwidth of a narrowband signal such as a speech signal. The method applies a parametric approach to bandwidth extension but does not require training. The parametric representation relates to a discrete acoustic tube model (DATM). The method comprises computing narrowband linear predictive coefficients (LPCs) from a received narrowband speech signal, computing narrowband partial correlation coefficients (parcors) using recursion, computing M_{nb} area coefficients from the partial correlation coefficient, and extracting M_{wb} area coefficients using interpolation. Wideband parcors are computed from the M_{wb} area coefficients and wideband LPCs are computed from the wideband parcors. The method further comprises synthesizing a wideband signal using the wideband LPCs and a wideband excitation signal, highpass filtering the synthesized wideband signal to produce a highband signal, and combining the highband signal with the original narrowband signal to generate a wideband signal. In a preferred variation of the invention, the M_{nb} area coefficients are converted to log-area coefficients for the purpose of extracting, through shifted-interpolation, M_{wb} log-area coefficients. The M_{wb} log-area coefficients are then converted to M_{wb} area coefficients before generating the wideband parcors.